IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL pending claims 2-9, 16-22, 24-27, and 29-37.

Please ADD new claims 38-62 in accordance with the following:

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38. (new) A table image processing device comprising:

a unit inputting an image comprising a sheet image including ruled lines;

a unit extracting a line by extracting a longitudinal line and a lateral line from the input image;

a unit finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting unit, and finding a potential match of the round corner region based on the oblique line;

a unit extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding unit; and

a unit deciding a round corner part deciding a round corner based on the cells found by the cell extracting unit;

wherein the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line, and

the unit finding the potential match of the round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner; and

the unit deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

39 (new) A table image processing device comprising:

a unit inputting an image comprising a sheet image including ruled lines;

a unit extracting a line by extracting a longitudinal line and a lateral line from the input image;

a unit finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting unit, and finding a potential match of the round corner region based on the oblique line;

a unit extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding unit; and

a unit deciding a round corner part deciding a round corner based on the cells found by the cell extracting unit;

wherein the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line; and

wherein (A)the unit finding a potential match of a round corner region decides the part as the potential match of the round corner by two processes of the process (A), (B) and (C) in the following:

(A) process that the part is decides as the potential match of the round corner, in the case that the first oblique element and the second oblique element overlap;

(B) process that the part is decided as the potential match of the round corner, in the case that the distance between the first and the second oblique line found by calculating the distance is within a fixed value; and

(C) the process that the part is decided as the potential match of the round corner in the case that any another oblique element does not exist near an identified oblique element and there is a pattern showing a line feature at the terminal of the identified oblique line; and

wherein the unit deciding a round corner part decides the part as the round corner in the case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

40. (new) A table image processing device comprising:

a unit inputting an image comprising a sheet image including ruled lines;

a unit extracting a line by extracting the longitudinal line and lateral line from an input image;

a unit finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting unit, and finding a potential match of the round corner region based on the oblique line;

a unit extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding unit; and

a unit deciding a round corner part deciding a round corner based on the cells found by the cell extracting unit;

wherein the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral; and

wherein (A) the unit finding a potential match of a round corner region decides the part as the potential match of the round corner by the process (A), (B) and (C) in the following:

(A) process that the part is decides as the potential match of the round corner, in a case that the first oblique element and the second oblique element overlap;

(B) process that the part is decided as the potential match of the round corner, in the case that the distance between the first and the second oblique line found by calculating the distance is within a fixed value; and

(C) the process that the part is decided as the potential match of the round corner in the case that any another oblique element does not exist near an identified oblique element and there is a pattern showing a line feature at the terminal of the identified oblique line; and

wherein the unit deciding a round corner part decides the part as the round corner in the case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

41. (new) A table image processing device in claim 38: wherein the unit deciding a round corner part, after the process of finding the round corner part based on the pixel density change, finds whether the regulation of the ruled line arrangement exists or not, and when the regulation exists, decides another corner of the input image as a round corner.

42. (new) A table image processing device in claim 39: wherein the unit deciding a round corner part, after the process of finding the round corner part based on the pixel density change, finds whether the regulation of the ruled line arrangement exists or not, and when the regulation exists, decides another corner of the input image as a round corner.

43. (new) A table image processing device in claim 40: wherein the unit deciding a round corner part, after the process of finding the round corner part based on the pixel density change, finds whether the regulation of the ruled line arrangement exists or not, and when the regulation exists, decides another corner of the input image as a round corner.

44. (new) A table image processing device in claim 38: wherein the unit deciding a round corner in the case that the round corner is not found in the round corner finding process based on the pixel density change, compares patterns made by connecting the terminals of the longitudinal lines or the lateral lines with the round corner part of the input image, and decides the part as the round corner part, when the patters are matched each other.

45. (new) A table image processing device in claim 39: wherein the unit deciding a round corner, in the case that the round corner is not found in the round corner finding process based on the pixel density change, compares patterns made by connecting the terminals of the longitudinal lines or the lateral lines with the round corner part of the input image, and decides the part as the

round corner part, when the patters are matched each other.

46. (new) A table image processing device in claim 40: wherein the unit deciding a round corner in the case that the round corner is not found in the round corner finding process based on the pixel density change, compares patterns made by connecting the terminals of the longitudinal lines or the lateral lines with the round corner part of the input image, and decides the part as the round corner part, when the patters are matched each other.

47. (new) A table image processing device in claim 40: wherein the unit deciding a round corner part decides the part as the round corner by the pixel density finding process; and

in the case that the round corner is not found in the round corner finding process based on the pixel density change, finds whether the regulation of the ruled line arrangement exists or not, and when the regulation exists, decides another corner of the input image as a round corner; and wherein

in the case that the round corner is not found in the round corner finding process based on the pixel density change and the regulation, compares patterns made by connecting the terminals of the longitudinal lines or the lateral lines with the round corner part of the input image, and decides the part as the round corner part, when the patters are matched each other.

48. (new) A table image processing device in claim 38: wherein the oblique element is decomposed to a longitudinal direction and a lateral direction, and each element is supposed as ruled lines of the longitudinal direction and the lateral direction.

49. (new) A table image processing device in claim 44: wherein the unit deciding a round corner decides, in case that a pattern of nth order function generated between the terminals of lines extracted by the unit extracting line matches the round corner part of the input image, the part as the round corner.

50. (new) A table image processing device in 38, further comprising:

a unit finding regions recognizing character finding the character recognition region by neglecting the round corner part decided by the unit

deciding round corner in the cells containing the round corner.

51. (new) A memory medium storing a program for implementing in a computer a table image processing device, wherein the program comprises:

a process inputting an image comprising a sheet image including ruled lines;

a process extracting a line by extracting a longitudinal line and a lateral line from the input image;

a process finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting process, and finding a potential match of the round corner region based on the oblique line;

a process extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding process; and

a process deciding a round corner part deciding a round corner based on the cells found by the cell extracting process;

wherein the process finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line, and

the process for finding the potential match of the round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner; and

the process for deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

52. (new) A memory medium storing a program for implementing in a computer a table image processing device, wherein the program comprises:

a process extracting a line by extracting a longitudinal line and a lateral line from the input image;

a process finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line

extracting process, and finding a potential match of the round corner region based on the oblique line;

a process extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding process; and

a process deciding a round corner part deciding a round corner based on the cells found by the cell extracting process;

wherein the process finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line; and

wherein (A)the process finding a potential match of a round corner region decides the part as the potential match of the round corner by two processes of the process (A), (B) and (C) in the following:

(A) process that the part is decides as the potential match of the round corner, in the case that the first oblique element and the second oblique element overlap;

(B) process that the part is decided as the potential match of the round corner, in the case that the distance between the first and the second oblique line found by calculating the distance is within a fixed value; and

(C) the process that the part is decided as the potential match of the round corner in the case that any another oblique element does not exist near an identified oblique element and there is a pattern showing a line feature at the terminal of the identified oblique line; and

wherein the process deciding a round corner part decides the part as the round corner in the case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

53. (new) A table image processing device comprising:

a unit extracting a line extracting longitudinal lines and lateral lines from an input image;

a unit deciding region recognizing character deciding region recognizing character;

a unit finding a ruled line by using the longitudinal lines and the lateral

lines extracted from the unit extracting lines as the potential match of the ruled line and for deciding whether the potential match of the ruled line is a ruled line or not, and

the unit extracting cells based on the result decided by the unit finding ruled line;

wherein the unit finding ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential match of the ruled line and any one of threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line, and

the unit finding ruled line comprises at least one unit of a pixel density finding unit (A) and a ruled line width finding unit (B);

the pixel density finding unit (A) finding comprising a first threshold fixed in advance and a second threshold fixed in advance higher than the first threshold, and

the pixel density finding unit, corresponding to the pixel density of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in the case that the pixel density of the image pattern other than the identified potential match of ruled line is high, and uses the second threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is low; and wherein:

the ruled line width finding unit (B) comprising the first threshold fixed in advance or the second threshold fixed in advance higher than the first threshold, and

the ruled line width finding unit, corresponding to the width of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the width of the image pattern is wide, and uses the second threshold in a case that the width of the image pattern is narrow.

54. (new) The table image processing device in claim 53, wherein the unit finding ruled line comprising:

when the potential match of the ruled line is a longitudinal line, an image pattern of same length as the potential match of the ruled line existing right and left of the potential match of the ruled line within a fixed range is used as the

image pattern existing around the potential match of the ruled line,

when the potential match of the ruled line is a lateral line, an image pattern of same length as the potential match of the ruled line existing up and under of the potential match of the ruled line within a fixed range is used as the image pattern existing around the identified potential match of the ruled line.

55. (new) The table image processing device in claim 53, wherein the ruled line width finding unit uses the potential match of the ruled line extending to same direction as the identified potential match of ruled line and adjacent or connected to the identified potential match of ruled line as the image pattern existing around the identified potential match of ruled line.

56. (new) The table image processing device in claim 53, wherein the ruled line width finding unit decides that the width of the potential match of the ruled line is wide in the case that the width of potential match of ruled line is grater than the n times of the width of the image pattern existing around the identified potential match of ruled line, and the width of the potential match of the ruled line is narrow in a case that the width of potential match of ruled line is less than the 1/n times of the width of the image pattern existing around the identified potential match of ruled line.

57. (new) A table image processing device comprising:

a unit extracting a line extracting longitudinal lines and lateral lines from an input image;

a unit deciding region recognizing character deciding region recognizing character;

a unit finding a ruled line by using the longitudinal lines and the lateral lines extracted from the unit extracting lines as the potential match of the ruled line and for deciding whether the potential match of the ruled line is a ruled line or not, and

the unit extracting cells based on the result decided by the unit finding ruled line;

wherein the unit finding the ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential

match of the ruled line and any one of threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line, and

the unit finding ruled line comprises a pixel density finding unit (A) and a ruled line width finding unit (B);

the pixel density finding unit (A) finding comprising a first threshold fixed in advance and a second threshold fixed in advance higher than the first threshold, and

the pixel density finding unit, corresponding to the pixel density of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is high, and uses the second threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is low; and wherein

the ruled line width finding unit (B) comprising the first threshold fixed in advance or the second threshold fixed in advance higher than the first threshold, and

the ruled line width finding unit, corresponding to the width of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the width of the image pattern is wide, and uses the second threshold in a case that the width of the image pattern is narrow.

58. (new) The table image processing device in claim 57 further comprising: a unit finding the potential match of the round corner region and a unit deciding a round corner part,

wherein the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line, and

the unit finding the potential match of the round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner; and

the unit deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the unit

extracting the cell changes in a fixed order.

59. (new) A memory medium storing program for implementing in a computer of a table image processing device comprising:

a process deciding region recognizing character deciding region recognizing character;

a process finding a ruled line by using the longitudinal lines and the lateral lines extracted from a unit extracting lines as the potential match of the ruled line and for deciding whether the potential match of the ruled line is a ruled line or not, and

a process extracting cells based on the result decided by the process finding a ruled line;

wherein the process finding the ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential match of the ruled line and any one of threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line, and

the process finding ruled line comprises at least one unit of a pixel density finding process (A) and a ruled line width finding process (B);

the pixel density finding process (A) finding comprising a first threshold fixed in advance and a second threshold fixed in advance higher than the first threshold, and

the pixel density finding process, corresponding to the pixel density of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is high, and uses the second threshold in the case that the pixel density of the image pattern other than the identified potential match of ruled line is low; and wherein

the ruled line width finding process (B) comprising the first threshold fixed in advance or the second threshold fixed in advance higher than the first threshold, and

the ruled line width finding process, corresponding to the width of the image pattern existing around the identified potential match of the ruled line,

uses the first threshold in a case that the width of the image pattern is wide, and uses the second threshold in a case that the width of the image pattern is narrow.

60. (new) A memory medium storing program for implementing in a computer of a table image processing device in claim 59, further comprising: a process for finding the potential match of the round corner region and a process for deciding a round corner part,

wherein the process finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line, and

the process finding the potential match of the round corner region decides, in the case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner; and

the process deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order.

61.(new) A table image processing method comprising:

a process extracting a line extracting longitudinal lines and lateral lines from an input image;

a process deciding region recognizing character deciding region recognizing character;

a process finding a ruled line by using the longitudinal lines and the lateral lines extracted from the unit extracting lines as the potential match of the ruled line and for deciding whether the potential match of the ruled line is a ruled line or not, and

the process extracting cells based on the result decided by the process for finding ruled line;

wherein the process finding ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential match of the ruled line and any one of threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern

existing around the identified potential match of the ruled line, and

the process finding ruled line comprises at least one unit of a pixel density finding process (A) and a ruled line width finding process (B);

the pixel density finding process (A) finding comprising a first threshold fixed in advance and a second threshold fixed in advance higher than the first threshold, and

the pixel density finding process, corresponding to the pixel density of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in the case that the pixel density of the image pattern other than the identified potential match of ruled line is high, and uses the second threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is low; and wherein

the ruled line width finding process (B) comprising the first threshold fixed in advance or the second threshold fixed in advance higher than the first threshold, and

the ruled line width finding process, corresponding to the width of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the width of the image pattern is wide, and uses the second threshold in a case that the width of the image pattern is narrow.

62. (new) The table image processing method in claim 61 comprising:

a process finding a potential match of a round corner region by extracting an oblique line which commences from a terminal of a line found by the line extracting process, and finding a potential match of the round corner region based on the oblique line;

a process extracting a cell finding cells containing the potential match of the round corner found by the potential match of the round corner region finding unit; and

a process deciding a round corner part deciding a round corner based on the cells found by the cell extracting unit;

wherein the process finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element

commencing from a terminal of a lateral line, and

the process finding the potential match of the round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner; and

the process deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the process extracting the cell changes in a fixed order.